

W. ARBETTER.
SEWING MACHINE.
APPLICATION FILED JUNE 18, 1906.

1,001,602.

Patented Aug. 29, 1911.

2 SHEETS—SHEET 1.

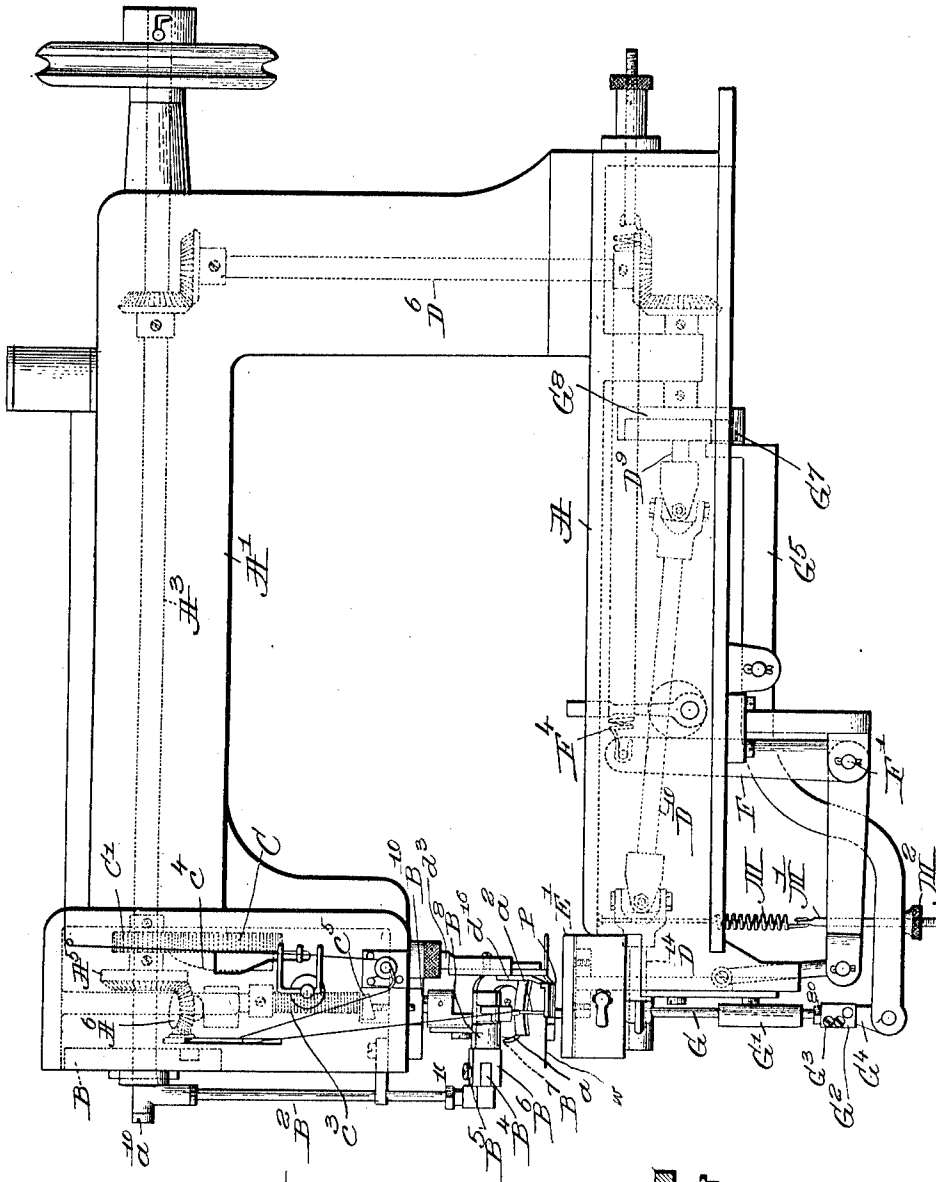


Fig. 1.

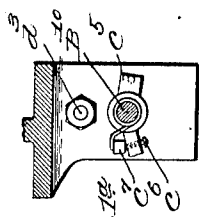
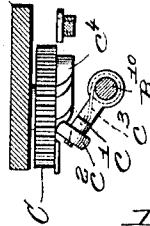


Fig. 1a.

Fig. 1b.



Witnesses:
Fred L. Grumbaf.
Wm. L. Prunty.

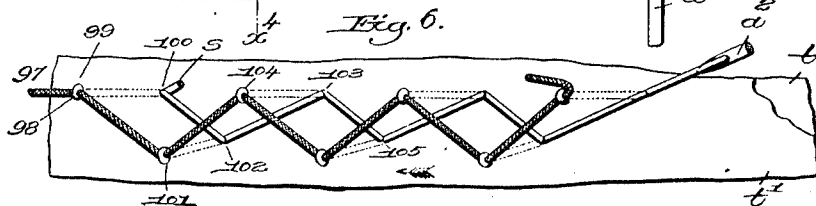
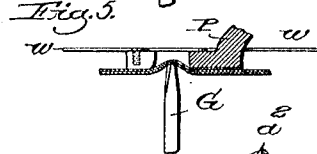
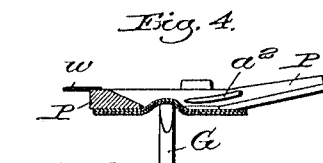
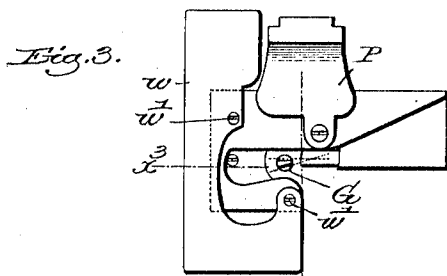
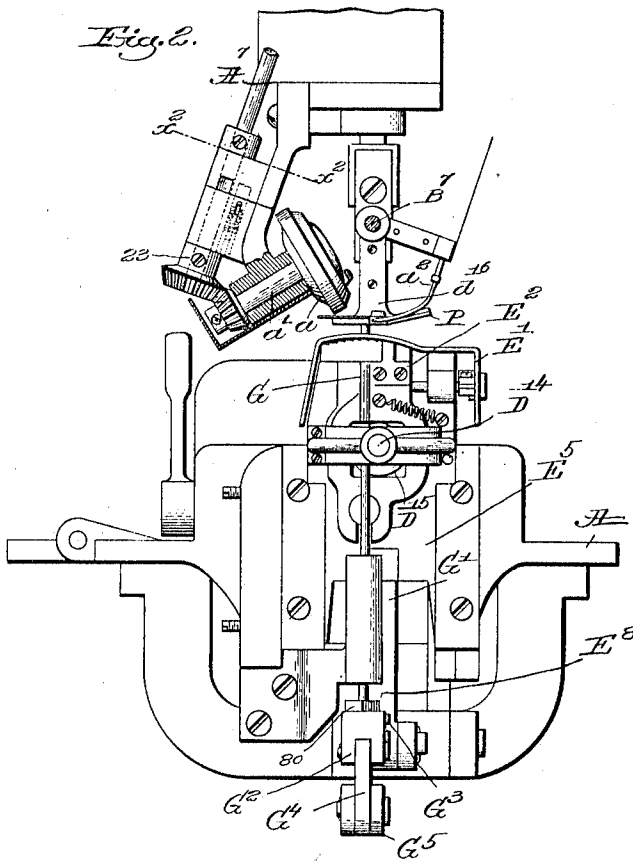
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Wm. Arbetter,
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2 SHEETS—SHEET 2.



Witnesses:
Fred. S. Grunhof.
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UNITED STATES PATENT OFFICE.

WOLF ARBETTER, OF CHELSEA, MASSACHUSETTS, ASSIGNOR TO ARBETTER FELLING MACHINE COMPANY, OF BOSTON, MASSACHUSETTS, A CORPORATION OF MAINE.

SEWING-MACHINE.

1,001,602.

Specification of Letters Patent.

Patented Aug. 29, 1911.

Application filed June 18, 1906. Serial No. 322,132.

To all whom it may concern:

Be it known that I, WOLF ARBETTER, a citizen of the United States, and resident of Chelsea, county of Suffolk, State of Massachusetts, have invented an Improvement in Sewing-Machines, of which the following description, in connection with the accompanying drawing, is a specification, like letters on the drawings representing like parts.

This invention has for its object the production of a novel sewing machine for making a blind stitch in fabrics to be united. In the making of a blind stitch, the fabric is usually bent so that the point of the thread-carrying needle enters and emerges from the same side of the material.

The invention to be herein described is an improvement on the class of machine represented in United States Patent No. 830,699, granted on the 11th day of September, 1906. In that patent, and in other inventions preceding it where a bender is used, the needle in its thrust into the fabric in the direction of the feed, which thrust is herein termed a "straight thrust," has crossed the bender between its ends and in its thrust oblique or diagonal to the direction of the feed herein termed its "diagonal thrust," has passed near and beyond one end of the bender, but in the invention herein to be described, the longer top edge of the bender is substantially parallel with the direction of movement of the eye-pointed thread-carrying needle when entering the work and said edge stands at right angles to the longitudinal axis of the main shaft and parallel with the direction of feed of the work. The bender herein to be described of peculiar construction supports the bent material so that the needle enters a bend of the material at the side of the bender, said needle entering said material at one thrust at one side of the bender and at its next thrust it enters the material at the opposite side of the bender.

Prior to this invention, in the manufacture of clothing where a stiffening is applied to the body fabric, as, for instance, in coat collars, shoulder padding, etc., the buckram or hair cloth has always been stitched to the material comprising the coat or other article being made by a needle in the hand of the operator, which of course is slow work.

The machine herein to be described has been, among other things, constructed to do this class of work rapidly and in a superior manner. I have also provided the presser-foot with a shield that is interposed between the work resting on the throat-plate, and the path of movement of the loop-taker, said shield preventing injurious contact of the loop taker with the work, especially any part of the work that happens to be raised or bunched at either side of the presser-foot when the work is being fed thereunder in the act of stitching the material together.

Figure 1 in side elevation represents a sufficient portion of a sewing machine such as represented in said patent together with the features of my improvement to be herein specified in the claims. Figs. 1^a and 1^b are details to be referred to. Fig. 2 is a partial left hand elevation of Fig. 1; Fig. 3 is a detail looking down on the presser-foot detached; Fig. 4 is a section on the line $x-x$, Fig. 3; Fig. 5 is a section on the line $x'-x'$, Fig. 3; Fig. 6 shows in face view a piece of work blind stitched as it may be by the machine to be herein described.

The bed A, the overhanging arm A', the main shaft A² having at its end a disk B provided with a crank pin a^{10} , the rod B², the link B⁴ connected by pin B⁵ with the bifurcated end B⁶ of the needle carrying rock shaft B⁷, shown by dotted lines Fig. 1, said shaft entering a bearing B⁸ and provided near its end with an arm to which is secured the curved eye-pointed thread-carrying needle a^2 , the shaft B¹⁰ to which an ear of said bearing B⁸ is secured by a screw 10, said shaft in the head of the overhanging arm having an arm c' provided with a roller c^2 that is turned normally by a spring c^3 toward a cam c^4 at the face of the gear C, the block c^5 fast on shaft B¹⁰, the stop c^7 and adjusting device c^6 to limit the extent of oscillation of said shaft between one and the next stitch; the rod d^3 carrying the presser-foot shank d^{10} ; the pinion C' moving gear C; the bevel gear A⁵ engaging the bevel gear A⁶ at the upper end of the driving shaft A⁷ for the loop taker; the loop-taker a , said shank a' occupying a diagonal position in the lower end of the bracket, to be referred to, the throat-plate E' on which the work rests while being stitched, the work-

feeding device E², its actuating cam D¹⁵, the shaft D¹⁴ rotated from shaft D⁹ through jointed shaft D¹⁰; the shaft D⁶ for rotating shaft D⁹; the elbow lever F pivoted at F'; the spring F⁴; the carriage E⁵ sustaining the throat-plate and work-feeding device, the link E⁸ connecting said carriage with said lever F; the bender actuating cam G⁸, the lever G⁵ having a projection provided with a roller G⁷, the bender G, excepting in particulars to be herein described, its guide G', link G⁴, and means G², G³ and 80 for adjusting said bender vertically to provide for variations in thickness of the work being acted upon by the bender, the spring M, screw rod M', a nut M², are and may be all as described in said patent wherein similar parts are designated by similar reference characters.

In the patent referred to, the upper end of the bender was shaped to present an edge that stood at right angles to the path of movement of the needle a² and said needle on its straight thrust penetrated the material lying on the top of said bender and between the ends of the bender and on its diagonal thrust passed one end of the bender. The machine herein to be described is illustrated as making a zig-zag blind stitch, see Fig. 6, for tacking stiffening such as buckram and hair cloth to collars and other parts of clothing that need to be stiffened. I have discovered by experiment that this class of work heretofore always done by a needle manipulated by the hand of the workman or workwoman may be done practically and very rapidly by machinery by changing the shape of the upper end of the bender and I have so shaped the upper end of the bender that its longer edge is located approximately parallel with the path of movement of the needle a² when penetrating the work to blind stitch the same, said edge bending the material upwardly in the throat of the presser-foot to be described, preparatory to the needle entering the material, the edge or upper end of the bender so supporting the work that the needle enters the bend of the material at one side of the edge of the bender on which the material rests.

Fig. 3 shows the upper edge of the bender G, while the crossing dotted lines show the path of the needle with relation to the sides of the bender when entering the work.

Viewing Fig. 4, it will be seen that the upper end of the bender G is beveled and reduced in thickness to present an edge the length of which stands approximately parallel with the direction of movement of the needle in entering the work to blind stitch the same, said edge also standing approximately at right angles to the longitudinal axis of the driving shaft of the machine and also parallel with the direction of the movement of the work when feeding the same.

Viewing Fig. 5, the work is shown as sustained by the top edge of the bender and the needle a² at one thrust enters the material at the right hand side of the top edge of the bender, and at its next thrust in making the next stitch at the left hand side of the bender, the work being fed between one and the succeeding thrust in making the successive stitches.

In feeding the work under the presser-foot, which is like that shown in said patent, the work sometimes projects or bunches above the top of the presser-foot at one or the other side thereof, and the loop-taker sometimes engages the work, cuts and injures same. To obviate this, I have provided the presser-foot herein designated P and common to said patent with a shield w that projects laterally from each side of the presser-foot, see Fig. 3, said shield being connected with said foot by screws w'.

Fig. 6 shows the two pieces of material, t, t' the piece t being the under or body of the material, while the piece t' represents a piece of buckram or other stiffening. It is supposed that the material is fed in the direction of the arrow thereon, Fig. 6, and in forming the stitch, the needle enters first at 100, the material between 100 and 99 being bent as provided for in Fig. 5, between the points 100 and 101. The needle preferably enters and emerges from the same side of the material, and the needle thread s entering at 100 comes out at 98 where the bobbin thread 97 is passed through the loop of needle thread. Then the needle is withdrawn, the material is fed, and the needle again enters the material at 102, this time in its diagonal position, as provided for in said patent, emerges at 101, where the loop of needle thread receives through it the bobbin thread 97. Then the needle is withdrawn, the work is fed, and the needle again enters the material at 103, the needle in the meantime being turned somewhat aside and it emerges at 104 where the loop of needle thread is again entered by the bobbin thread. The needle is retracted and again turned to enter the material at 105 in its diagonal thrust.

It will be understood, as before stated, that the needle enters the material at one side of the bender at one thrust, and at the opposite side of the bender at the next thrust, and that between the successive thrusts of the needle into and from the material at the same side the material is fed. With this stitch, the above threads show on the buckram and the needle thread is contained within and is not exposed at the under side of the body material t which latter may be the outside of a collar of a coat.

It will be understood that the needle in both of its thrusts, namely, the "straight" 130

thrust in the direction of the feed and the "diagonal" thrust in a direction diagonal to the feed, enters and emerges from the upper face of the fabric so that the paths of the needle through the goods form lines respectively parallel with and diagonal to the direction of the feed. In the construction herein set forth the straight edge of the bender is approximately parallel to the direction of both the paths of the needle, the divergence between the two paths being comparatively slight, enabling this to be done. This position of the top edge of the bender as contradistinguished from the position where the top edge is transverse to or intersects one or both of the paths of the needle, insures the needle passing through the fabric and forming the stitch at each thrust in precisely the same way, which is necessary in blind stitching this kind of work. By this construction the plies of material are held at each side of the bender edge symmetrically so that the material is properly bent and firmly held by the single position of the bender for each thrust of the needle, whether "diagonal" or "straight", because the needle has substantially the same relation to the bender at each thrust whether diagonal or straight.

Having described my invention, what I claim as new and desire to secure by Letters Patent is:—

1. A blind stitch sewing machine comprising a stitch-forming mechanism provided with a reciprocating needle, and a bender having its top edge extended approximately parallel to the direction of the path of the needle when entering the material.

2. A blind stitch sewing machine comprising a stitch-forming mechanism provided with a reciprocating needle, a bender having its top edge extended approximately parallel to the direction of the path of the needle when entering the material, and means for actuating the bender to bend the material into the path of the needle.

3. A blind stitch sewing machine comprising a stitch-forming mechanism provided with a reciprocating and laterally vibrating needle, and a bender having its top

edge extended approximately parallel to the paths of the needle when entering the material.

4. A blind stitch sewing machine comprising a stitch-forming mechanism provided with a reciprocating and laterally vibrating needle, a bender having its top edge extended approximately parallel to the paths of the needle when entering the material, and means for actuating the bender to carry its top edge between the paths of the needle and thus bend the material for the entrance of the needle.

5. A blind stitch sewing machine comprising a work-rest for the material, a stitch-forming mechanism located above said work-rest and provided with a reciprocating and laterally vibrating needle, a bender projecting through said work-rest and having its top edge extended approximately parallel to the paths of the needle when entering the material, and means for actuating the bender to carry its top edge between the paths of the needle and thus bend the material for the entrance of the needle.

6. A blind stitch sewing machine comprising a work-rest for the material, a stitch-forming mechanism located above said work-rest and provided with a reciprocating and laterally vibrating needle, a bender projecting through said work-rest and having its top edge extended approximately parallel to the paths of the needle when entering the material, a presser-foot located between the work-rest and stitch-forming mechanism and provided with an opening above the bender, and means for actuating the bender to bend the material into said opening between the paths of the needle whereby the needle may enter the material in approximately the same relation to the bender at each thrust.

In testimony whereof, I have signed my name to this specification, in the presence of two subscribing witnesses.

WOLF ARBETTER.

Witnesses:

GEO. W. GREGORY,
MARGARET A. DUNN.